Remarks

The Office Action of November 26, 2004 has been carefully considered. In response thereto, claims 1, 6, 8, 9, 25, 26 and 29 have been amended, claims 10-21 and 30-35 have been withdrawn pursuant to a provisional election made during a telephone conference with the Examiner on November 16, 2004. Affirmation of this election is hereby made my Applicants.

Claim Rejections 35 U.S.C. §112

On page 4 of the Office Action of November 26, 2004, claims 8 and 9 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement, since the Examiner believed that the terms "hydrophilic agent" (water loving), "oleophilic agent" (oil loving), and "hydrophobic agent" (water repellent), were not described in the specification in such a way as to enable one skilled in the art to which it pertains to make or use the invention.

Hydrophilic, hydrophobic and oleophilic agents are discussed in connection with subsequent polyvinyl-plastisol or water based coatings, generally in paragraph [0017] (last sentence) of Applicants' specification, which provides verbatim support for the limitations of claims 8 and 9. Specific combinations of binders, sizings and coatings, which are known by those of ordinary skill in the art as being hydrophilic, hydrophobic or oleophilic in nature, are disclosed at paragraph [0088] (last sentence) and paragraph [0092]. More particularly, as stated in paragraph [0088], the following is known, or believed to be known, by Applicants: an epoxy polymer (*usually hydrophobic*), amine coupling agent (*can be either oleophobic or hydrophobic*) and a non-ionic surfactant (*can be both*); an epoxy polymer (*usually hydrophobic*), metacrylic and epoxy coupling agents (*usually hydrophobic*), and cationic and non-ionic surfactants,

paraffin lubricants (*can be both*); anhydrous polymerized acrylate amine, metacrylic and epoxy coupling agents and a non-ionic surfactant; and anhydrous polymerized epoxy amine, vinyl and amine coupling agents, and a non-ionic surfactant, and a polymeric coating selected from the group consisting of acrylic (*usually, but not always hydrophobic*) and PVC plastisol (*hydrophobic*).

In addition, paragraph [0092] mentions further specific oleophobic and hydrophobic coatings: examples of materials which have been reported as being effective for improving the water-resistant properties of cementitious products either as a binder, finish or added coating, or performance additive 103 are the following: poly(vinyl alcohol) (*oleophobic*), with or without a minor amount of poly(vinyl acetate) (*slightly oleophobic*); metallic resinates; wax or asphalt or mixtures thereof; a mixture of wax and/or asphalt and also corn-flower and potassium permanganate; water insoluble thermoplastic organic materials such as petroleum and natural asphalt, coal tar. In general, the additives are hydrophobic (oleophilic) with the exception of polyvinyl alcohol and, to a lesser extent, polyvinyl acetate.

Accordingly, in view of the disclosure of oleophobic, hydrophobic and hydrophilic coatings generally, and the express listing of specific examples of compounds having these properties, reconsideration of this first paragraph, §112 rejection is respectfully requested

On pages 4 and 5 of the Office Action, claims 6, 8 and 9 were rejected under the second paragraph of §112 as being indefinite, since the term "polyvinyl chloride" was abbreviated as "pvc". Applicants have amended claims 6, 8 and 9 to provide the full chemical name for "pvc". Accordingly, reconsideration of this rejection pursuant to the second paragraph of §112 is respectfully requested.

Claim rejections – 35 U.S.C. §§102/103

On pages 5-8 of the Office Action, claims 1-5, 7, 9, 22 and 25-29 were rejected under §102(b) or, in the alternative, under §103(a) as anticipated by, or rendered obvious over, Kobayashi et al., '633. The Examiner has also rejected claim 23 as being unpatentable over Kobayashi et al., '633 in view of Endo et al., '275, and claims 6, 8, and 24 as being unpatentable over Kobayashi et al., '633 in view of Endo et al., '275, and further in view of Wu et al., '555.

Independent claims 1, 25 and 26 have now been amended to include a weight distribution ratio defined by WPU_{cd} / WPU_{md}, support for which is described in paragraph [0008] of Applicants' specification. In addition, said weight distribution ratio of less than about 2.0:1 has been amended to be measured at the point before the fabric reinforcement is embedded or adhesively or mechanically bonded to the matrix, as supported in paragraph [0090] of Applicants' specification. These amendments are for clarification purposes only, since they were believed to be inherent in these claims as originally presented. Nevertheless, these amendments make it abundantly clear that both the warp and weft yarns of the present invention are coated with a resinous coating before the fabric reinforcement is applied to a matrix, such as cement for a cementitious board, for example.

The Examiner's primary reference, Kobayashi et al., '633, on the other hand, while admittedly teaching that both the weft and warp yarns can be non-twist or low twist, insist that "the adhesive agent [be] impregnated into the weft alone." Col. 2, lines 35-38. This is because Kobayashi et al. believe that "the application of adhesive agent to the warps, i.e., reinforcing fibers, inhibits impregnation of matrix resin into the reinforcement to frequently cause the generation of voids which deteriorate reinforcing effect." Col. 1, line 67 – Col. 2, line 2.

By eliminating the repeated flexing of the warp fiber caused by weaving and knitting operations, and relying on a laid-up scrim-type fabrication method in which adhesive impregnated weft yarns are bonded to non-impregnated warp yarns at their intersection, Kobayashi et al. claim that the strength of the resulting composite is improved. Col. 3, lines 35-41, for example.

The Examiner's attention is directed to Examples 1-7 of Kobayashi et al., in which a range of about 10-18 weight percent adhesive coating is applied to the weft yarns (WPU_{cd} = 10-18%, based upon the weight of the weft) and no adhesive coating is provided on the warp yarns (WPU_{md} =0). Using Applicants' definition for coating weight distribution ration of WPU_{cd} / WPU_{md} , all of Kobayashi et al.'s coating weight distribution ratios equal infinity, a number which is greatly in excess of the range of less than about 2.0:1, expressed in Applicants' independent claims 1, 25 and 26. Applicants' independent claims further make it clear that the coating weight distribution ratio WPU_{cd} / WPU_{md} is measured before the fabric is actually used in a matrix, so as to not be confused with matrices in which added weight or coating is applied to the warp yarns after being used with, or impregnated into, a matrix.

Accordingly, it is believed that a coating weight distribution ratio less than about 2.0:1 is not inherent to the invention described by Kobayashi et al., but rather, is neither taught nor suggested by this reference.

The Examiner has also stated that Kobayashi et al. teach impregnation of the matrix resin into the warp becomes easy (col. 2, lines 39-43). Impregnation of the matrix resin into the warp of Kobayashi et al. would be expected since the warp yarns of Kobayashi et al. are not coated, unlike the warp yarns of Applicants' claimed fabrics of claims 1, 25 and 26, when the

reinforcement is made.

The Examiner also states that Kobayashi et al. also teach that inhibiting impregnation of matrix resin to the warp is preferably avoided (col. 1, line 67 – col. 2, line 2). This specific quote is explained by the fact that Kobayashi et al. desire to leave their warps uncoated before contact with a matrix, so that as much matrix material can impregnate the warp yarns as possible, thereby effecting greater strength. Applicants' invention pre-coats the warp yarns, so as to avoid gaps and voids, which would expose the yarns to corrosion in caustic environments, such as the alkali environment associated with the production of cement boards. See Applicants' specification at paragraph [0011]. Accordingly, Kobayashi et al. do not appreciate the problem to which Applicants endeavor to find a solution. Rather, Kobayashi et al. seek to impregnate the exposed fibers in the warp yarns with matrix material, an achievement which would be contradictory to Applicants' purposes, since Applicants seek to avoid impregnation of the warp yarns by the matrix.

Claim 22 has not been amended, and is believed to be distinguishable over Kobayashi et al. on its face. Claim 22 recites that a resinous coating be applied to the plurality of warp and the plurality of weft yarns while the warp yarns are pulled in tension in a machine direction, such that the weft yarns absorb less of the resinous coating than the weft yarns would absorb if the second twist of the weft yarns was equal to the first twist of the warp yarns. Kobayashi et al. do not suggest pulling the warp yarns in tension in a machine direction, such as to minimize the weft pick-up or WPU_{md}. Since the Kobayashi et al. reference does not disclose applying any coating to the warp yarns while they are being pulled in tension in a machine direction during the manufacture of the fabric, this reference does not teach or suggest Applicants' invention of claim

22.

Finally, it appears that Endo et al. '275 are concerned with the same problem that Kobayashi et al. are concerned with (Endo et al., col. 2, lines 45-50), impregnating the warp yarns with a matrix, rather than protecting the warp yarns from corrosion, and would also fail to accommodate for the imperfections in the Kobayashi et al. reference. Wu et al., '555, while teaching various coatings for glass fiber yarns, do not teach or appreciate the corrosion problem solved by Applicants. Moreover, it would be inappropriate for Kobayashi et al. or Endo et al. to rely on the coated fibers of Wu et al. for use as warp fibers, since neither Kobayashi et al. nor Endo et al. claim any benefit by coating the warp fibers, and expressly teach away from this feature.

In view of the above, reconsideration of the presently pending claims is respectfully requested and an early notice of allowance is earnestly solicited.

Respectfully submitted,

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